IN THE CLAIMS:

1-12. (Canceled)

13. (Withdrawn) A method of determining the inherent regenerative capacity of transgenic fish of claims 4, 7, 8, and 9 with respect to ablation and subsequent regeneration, or deficiency thereof, of specific targeted cells and/or tissue types comprising a targeted cellular ablation and subsequent regeneration screening procedure whereby the transgenic fish is exposed to an ablation-promoting pro-drug, whereby a cell(s) of the transgenic fish expressing a pro-drug converting moiety is contacted with the pro-drug and wherein the pro-drug is converted into a cytotoxic drug by action of the pro-drug converting moiety and whereby only the cell(s) expressing the pro-drug converting moiety are ablated by action of the drug and, whereby subsequent regeneration, or lack of regeneration, of the ablated cell(s) is detected by the general presence, or absence, of regenerating cells and/or the presence, or absence, of a cellular reporter expressed by regenerating cells, such that if regeneration is detected the fish is determined to be regeneration-competent with regards to the targeted cell(s), cell type(s), or tissue(s) and, whereas if regeneration is not detected the fish is determined to be regeneration-deficient.

14. (Withdrawn) A method of determining the inherent regenerative capacity of transgenic fish of claims 4, 7, 8, and 9 with respect to ablation and subsequent regeneration, or deficiency thereof, of cells ablated regionally comprising: a regional cellular ablation and subsequent regeneration screening procedure whereby the transgenic fish is exposed to an ablation-promoting pro-drug, whereby a cell(s) of the transgenic fish expressing a pro-drug converting moiety is brought into contact with the pro-drug and wherein the pro-drug is converted into a cytotoxic drug by action of the pro-drug converting moiety and whereby the cell(s) producing the cytotoxic drug, as well as cells in the general vicinity of the cytotoxic drug producing cell, are ablated by action of the drug and, whereby subsequent regeneration, or lack of regeneration, of the ablated cell(s) is detected by the general presence, or absence, of regenerating cells and/or the presence, or absence, of a cellular reporter expressed by regenerating cells, such that if regeneration is detected the fish is determined to be regeneration-competent with regards to the regionally ablated cell(s), cell type(s), or tissue(s) and, whereas if regeneration is not detected the fish is determined to be regeneration-deficient.

15. (Withdrawn) A method of identifying genes and genetic mutations affecting cellular regeneration in transgenic fish of claims 4, 7, 8, and 9 comprising creating and identifying mutant transgenic fish whereby progeny of mutagenized transgenic fish of claims 4, 7, 8, and 9 are subjected to targeted or regional cellular ablation within the context of a "forward genetics" mutagenesis screen and mutant transgenic fish are identified by an alteration in the competency or deficiency for cellular regeneration in those progeny containing the mutation(s) from mutagenized transgenic fish, such that geneti c mutations are identified which alter the regenerative capacity of the fish, whereby mutations either diminish the regenerative capacity of regeneration-competent fish, or enhance the regenerative capacity of regeneration-deficient fish with respect to the ablated cell(s) or tissue types by detecting the presence or absence of regenerating cells and/or the presence or absence of a cellular reporter expressed by regenerating cells, and whereby instances of altered regenerative capacity are due to a mutation(s) that causes an alteration in gene structure, gene product structure, gene product function, and/or gene product expression, thereby identifying the altered gene and/or gene product as a factor capable of influencing the process of cellular regeneration, whereby mapping, cloning, and sequencing of the altered gene identifies a precise genetic alteration capable of influencing the function of the associated gene(s) and thereby the process of cellular regeneration.

16. (Withdrawn) A method for identifying compounds which alter cellular regeneration in fish comprising a pharmacological screen where transgenic fish of claims 4, 7, 8, and 9, and mutant fish derived thereof with an altered capacity for cellular regeneration, are subjected to targeted or regional cellular ablation, and subsequently the fish are maintained in the presence of a discrete molecular compound or sets of molecular compounds, such that compounds can be identified which alter the regenerative capacity of the fish, relative to fish maintained in control conditions, whereby compounds either diminish the regenerative capacity of regeneration-competent fish, or enhance the regenerative capacity of regeneration-deficient fish with respect to the ablated cell(s) or tissue types by detecting the presence or absence of regenerating cells and/or the presence or absence of a cellular reporter expressed by regenerating cells, whereby compounds promoting an enhanced capacity for regeneration are determined to be target compounds and/or drugs capable of promoting the process of cellular regeneration and compounds promoting a

diminished capacity for regeneration are determined to be target compounds and/or drugs capable of promoting the process of cellular degeneration.

17. (Withdrawn) A method in accordance with claims 13, 14, 15, and 16 where the transgenic fish is zebrafish.

18. (Withdrawn) A method in accordance with claim 13, 14, 15, and 16 where the transgenic fish is medaka.

19-30. (Canceled)

31. (New) A transgenic fish selected from the group of zebrafish and medaka fish, said fish comprising a transgene that encodes an ablation promoting moiety operably linked to a regulatory DNA sequence, wherein the ablation promoting moiety includes at least one component of a pro-drug conversion system, and wherein the transgene is expressed in a reproducible spatial and temporal pattern in the fish.

32. (New) The transgenic fish of Claim 31 wherein the transgene further encodes a reporter, wherein the expression of the reporter is coupled to the expression of the ablation promoting moiety, and wherein the reporter facilitates detection of the cells expressing the transgene.

33. (New) The transgenic fish of Claim 31 wherein the regulatory DNA sequence is of homologous origin, being from the species that is the transgenic fish.

34. (New) The transgenic fish of Claim 31 wherein the regulatory DNA sequence is of heterologous origin, being from a species other than the transgenic fish.

35. (New) The transgenic fish of Claim 31 wherein the transgene is inserted into the genome of the fish, and wherein a regulatory DNA sequence of endogenous origin, such as an enhancer, regulates the expression of the encoded transgene product.

36. (New) The transgenic fish of Claim 31 wherein the regulatory DNA sequence specifies cell specific expression of an encoded transgene product.

37. (New) The transgenic fish of Claim 31 wherein a transgene encoded ablation promoting moiety is specifically expressed in neuronal cells.

38. (New) The transgenic fish of Claim 31 wherein a transgene encoded ablation promoting moiety is specifically expressed in heart cells.

39. (New) The transgenic fish of Claim 31 wherein a transgene encoded ablation promoting moiety is specifically expressed in cartilage cells.

40. (New) The transgenic fish of Claim 31 wherein a transgene encoded ablation promoting moiety is specifically expressed in bone cells.

41. (New) A transgenic fish selected from the group of zebrafish and medaka fish, said fish comprising a transgene which encodes an ablation promoting moiety, operably linked to an upstream activator sequence, wherein the ablation promoting moiety includes at least one component of a pro-drug conversion system, and wherein the presence of a transcriptional activator which binds to the upstream activator sequence, acting in cis – being also encoded by the transgene that encodes the ablation promoting moiety – or in trans – encoded on a separate trasngene than that which encodes the ablation promoting moiety – relative to the upstream activating sequence, is required for expression of the encoded transgene product.

42. (New) The transgenic fish of Claim 41 wherein the transgene further encodes a reporter, wherein the expression of the reporter is coupled to the expression of the ablation promoting moiety, and wherein the reporter facilitates detection of the cells expressing the transgene.